

TABLE A–1—SO<sub>2</sub>EMISSION AVERAGING PERIODS AND ANNUALIZATION FACTORS

Definition	Annualization factor	
	Scrubbed Unscrubbed	
	Unit	Unit
Oil/gas unit .....	1.00	1.00
<=1 day .....	0.93	0.89
1 week .....	0.97	0.92
30 days .....	1.00	0.96
90 days .....	1.00	1.00
1 year .....	1.00	1.00
Not specified .....	0.93	0.89
At all times .....	0.93	0.89
Coal unit: No Federal limit or limit unknown .....	1.00	1.00

## APPENDIX B TO PART 72—METHODOLOGY FOR CONVERSION OF EMISSIONS LIMITS

For the purposes of the Acid Rain Program, all emissions limits must be expressed

TABLE B–1—CONVERSION FACTORS

[Emission limits converted to lbs SO<sub>2</sub>/MMBtu by multiplying as below]

Unit measurement	Plant fuel type			
	Bituminous coal	Subbituminous coal	Lignite coal	Oil
Lbs sulfur/ MMBtu .....	2.0	2.0	2.0	2.0
% sulfur in fuel .....	1.66	2.22	2.86	1.07
Ppm SO <sub>2</sub> .....	0.00287	0.00384	.....	0.00167
Ppm sulfur in fuel .....	.....	.....	.....	0.00334
Tons SO <sub>2</sub> /hour .....	2,000,000/(HEATRATE*SUMNDCAP*capacity factor) <sup>1</sup>			
Lbs SO <sub>2</sub> /hour .....	1,000/(HEATRATE*SUMNDCAP*capacity factor) <sup>1</sup>			

<sup>1</sup> In these cases, if the limit was specified as the "site" limit, the summer net dependable capability for the entire plant is used; otherwise, the summer net dependable capability for the unit is used. For units listed in the NADB, "HEATRATE" shall be that listed in the NADB under that field and "SUMNDCAP" shall be that listed in the NADB under that field. For units not listed in the NADB, "HEATRATE" is the generator net full load heat rate reported on Form EIA-860 and "SUMNDCAP" is the summer net dependable capability of the generator (in MWe) as reported on Form EIA-860.

TABLE B–2—ASSUMED AVERAGE ENERGY CONTENTS

Fuel type	Average heat content
Bituminous Coal .....	24 MMBtu/ton.
Subbituminous Coal .....	18 MMBtu/ton.
Lignite Coal .....	14 MMBtu/ton.
Residual Oil .....	6.2 MMBtu/bbl.

APPENDIX C TO PART 72—ACTUAL 1985 YEARLY SO<sub>2</sub> EMISSIONS CALCULATION

The equation used to calculate the yearly SO<sub>2</sub> emissions (SO<sub>2</sub>) is as follows:

SO<sub>2</sub> = (coal SO<sub>2</sub> emissions) + (oil SO<sub>2</sub> emissions) (in tons)

If gas is the only fuel, gas emissions are defaulted to 0.

Each fuel type SO<sub>2</sub> emissions is calculated on a yearly basis, using the equation:

fuel SO<sub>2</sub> emissions (in tons) = (yrly wtd. av. fuel sulfur %) × (AP-42 fact.) × (1-scrb.

in pounds of SO<sub>2</sub> per million British Thermal Unit of heat input (lb/MMBtu).

The factor for converting pounds of sulfur to pounds of SO<sub>2</sub> is based on the molecular weights of sulfur (32) and SO<sub>2</sub> (64). Limits expressed as percentage of sulfur or parts per million (ppm) depend on the energy content of the fuel and thus may vary, depending on several factors such as fuel heat content and atmospheric conditions. Generic conversions for these limits are based on the assumed average energy contents listed in table A-2. In addition, limits in ppm vary with boiler operation (e.g., load and excess air); generic conversions for these limits assume, conservatively, very low excess air. The remaining factors are based on site-specific heat rates and capacities to develop conversions for Btu per hour. Standard conversion factors for residual oil are 42 gal/bbl and 7.88 lbs/gal.

effic. %/100) × (units conver. fact.) × (yearly fuel burned)

For coal, the yearly fuel burned is in tons/yr and the AP-42 factor (which accounts for the ash retention of sulfur in coal), in lbs SO<sub>2</sub> ton coal, is by coal type:

Coal type	AP-42 factor
Bituminous, anthracite .....	39 lbs/ton
Subbituminous .....	35
Lignite .....	30

For oil, the yearly fuel burned is in gal/yr. If it is in bbl/yr, convert using 42 gal/bbl oil. The AP-42 factor (which accounts for the oil density), in lbs SO<sub>2</sub>/thousand gal oil, is by oil type:

Oil type	AP-42 factor
Distillate (light) .....	142 lbs/1,000 gal
Residual (heavy) .....	157

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For all fuel, the units conversion factor is 1 ton/2000 lbs.

### APPENDIX D TO PART 72—CALCULATION OF POTENTIAL ELECTRIC OUTPUT CAPACITY

The potential electrical output capacity is calculated from the maximum design heat input from the boiler by the following equation:

$$\frac{\text{max. design heat input}}{3} \times \frac{\times 1 \text{ kw-hr}}{3413 \text{ Btu}} \times \frac{\times 1 \text{ MWe}}{1000 \text{ Kw}}$$

For example:

(1) Assume a boiler with a maximum design heat input capacity of 340 million Btu/hr.

(2) One-third of the maximum design heat input capacity is 113.3 mmBtu/hr. The one-third factor relates to the thermodynamic efficiency of the boiler.

(3) To express this in MWe, the standards conversion of 3413 Btu to 1 kw-hr is used:  $113.3 \times 10^6 \text{ Btu/hr} \times 1 \text{ kw-hr} / 3413 \text{ Btu} \times 1 \text{ MWe} / 1000 \text{ kw} = 33.2 \text{ MWe}$

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